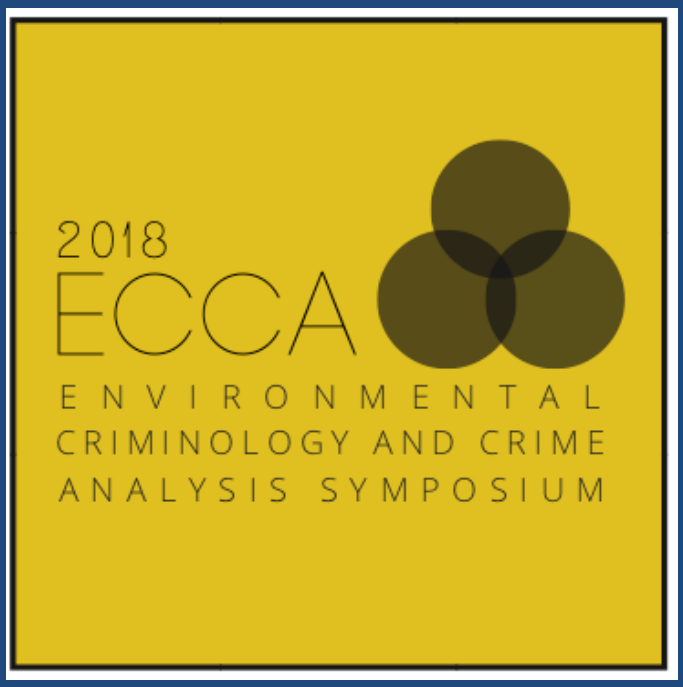
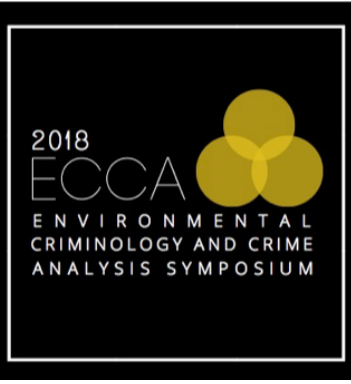
UNIVERSITAS Miguel Hernández

CRÍMINA

Centro Crímina para el estudio y prevención de la delincuencia





ECCA

The International Symposium on Environmental Criminology and Crime Analysis

June 5-7, 2018 – Elche (Spain)

http://www.ecca2018.com

Crímina Research Center - Miguel Hernández University

General Information

Organizing committee

Fernando Miró Llinares (Chair)

José E. Medina Sarmiento

Lucía Summers

Nerea Marteache

Breakfast is served every morning from 7 a.m.

Registration is on Monday evening from 7 p.m.

Internet instructions:

Free Wi-Fi service throughout the hotel.

Please obtain instructions from reception when checking in.

Internet access at Miguel Hernández University: Eduroam / UMH web.

All activities will take place at the conference hotel, unless otherwise indicated.

Emergency phone numbers:

+34 639 684574 (José E. Medina)

+1512 658 6675 (Lucía Summers)

Please use WhatsApp to text/call either phone number via Wi-Fi. WhatsApp is an app that can be installed on Android, iPhone, Windows phones, or on Windows or Mac computers (see https://www.whatsapp.com/).

Monday, June 4

7 p.m. – 10 p.m. Arrival, registration, informal reception

Hotel Huerto del Cura - Canonigos room IV

Tuesday, June 5

9.00 a.m. – 9.15 a.m. Welcome and opening

9.15 a.m. – 9.50 a.m. Keynote presentation

Marcus Felson and Fernando Miró Llinares

Routine activity theory: 40 years and some new technologies later

9.50 a.m. – 10.00 a.m. Comfort break

10.00 a.m. – 11.30 a.m. Panel 1: Crime pattern theory

Chaired by Lucía Summers

Each presenter will have 15" to present and 5" for questions/discussion (10" buffer)

Stijn Ruiter and Toby Davies	BTW, a test of crime pattern theory
Tim Hart, Daniel Birks, Michael Townsley, Stijn Ruiter, and Wim Bernasco	Activity nodes, activity spaces, and awareness spaces: Measuring geometry of crime's constructs with smartphone data
Tamara D. Madensen-Herold and William H. Souza	Crime-place network connectivity and configurations
Barbara Menting, Marre Lammers, Stijn Ruiter, and Wim Bernasco	More time spent, more likely to offend? The influence of visiting frequency on crime location choice

11.30 a.m. – 12.10 p.m. Coffee break at Palmeral Museum

(next door to hotel)

12.10 p.m. – 1.00 p.m. Panel 2: Temporal patterns of crime

Chaired by Lisa Tompson

Each presenter will have 15" to present and 5" for questions/discussion (5" buffer)

Sabine van Sleeuwen, Wouter Steenbeek, and Stijn Ruiter	When do offenders commit their crimes? A within-person analysis of temporal consistency in offending
Andrew Wheeler and Cory Haberman	Modeling the spatial patterns of intra-day crime trends
Matthew Ashby	Understanding spatio-temporal patterns of crime around schools

1.00 p.m. – 2.00 p.m. Lunch

2.00 p.m. – 3.30 p.m. Panel 3: Crime reduction and offender decision-making

Chaired by Richard Wortley

Each presenter will have 15" to present and 5" for questions/discussion (10" buffer)

Lisa Tompson, Aiden Sidebottom, Jyoti Belur, Amy Thornton, and Kate Bowers	Evidence appraisal of systematic reviews in crime reduction: How do place-based interventions measure up?
Lucía Summers and D. Kim Rossmo	Offender decision-making
D. Kim Rossmo and Lucía Summers	Crime control and displacement
Daniel Birks, Henk Elffers, Matthew Manning, and Michael Townsley	Does opportunity reduction also reduce criminal persistence? Exploring a unified model of crime event and criminal involvement choices

3.30 p.m. – 3.50 p.m. Coffee break

3.50 p.m. – 5.10 p.m. Panel 4: Cybercrime and cybersecurity

Chaired by Stijn Ruiter

Each presenter will have 15" to present and 5" for questions/discussion (5" buffer)

Fernando Miró Llinares and Asier Moneva Pardo	Hate is in the air! But where? Introducing an algorithm to detect hate speech in digital microenvironments
Shane Johnson and John Blythe	Crime and the internet of things: Encouraging security by design through consumer labeling
Pieter Hartel, Susanne Barth, Marianne Junger, and Lorena Montoya	Teaching empirical social science research to cyber security students. The case of "Thinking like a thief"
Graham Farrell	Did cybercrime cause the crime drop?

7.00 p.m. – 10.00 p.m. Parque Natural de El Hondo

Buses will be ready to depart the hotel at 7pm, for transfer to the park (travel time 20-30" approx.), where we will watch the sunset and have dinner.

Wednesday, June 6

8.45 a.m. – 10.15 a.m. Panel 5: Methodological issues in crime mapping

Chaired by Jerry Ratcliffe

Each presenter will have 15" to present and 5" for questions/discussion (10" buffer)

Manne Gerell	Quantifying the geographic (un)reliability of police data
Weiwei Liao, Shuli Zhou, and Lin Liu	A model for optimizing Chinese crime addresses' geocoding results from multiple map APIs based on clustering and classifying
Martin Andresen, Nick Malleson, Michael Townsley, Wouter Steenbeek, and Christophe Vandeviver	Minimum geocoding success rates: The impact of data and areal unit sizes
Nick Malleson, Martin Andresen, Martin, and Wouter Steenbeeck	Identifying the appropriate spatial resolution for the analysis of crime patterns

10.15 a.m. – 10.35 a.m. Coffee break

10.35 a.m. – 11.40 a.m. Panel 6: Policing initiatives

Chaired by Johannes Knutsson

Each presenter will have 15" to present and 5" for questions/discussion (5" buffer)

Jerry Ratcliffe	An expanded SARA model for mid-level police leadership
Roberto Santos and Rachel Santos	Results from a blind random controlled trial testing police response in micro-time hot spots
Joe Clare and Nicola Stokes	Post-hoc evaluation of a police-led pilot cocooning intervention: A promising start with room for improvement

11.40 a.m. – 11.50 a.m. *Comfort break*

11.50 p.m. – 12.35 p.m. **Panel 6: Policing initiatives (cont.)**
Chaired by Johannes Knutsson

Each presenter will have 15" to present and 5" for questions/discussion (5" buffer)

Elizabeth Groff and Travis Taniguchi	Near repeat burglary: Estimating crime prevention potential
Rachel Santos and Roberto Santos	Predictive policing: Where's the evidence?

12.45 p.m. – 2.00 p.m. *Lunch at Miguel Hernández University*

Buses will be ready to depart the hotel at 1.00pm, for transfer to the university (travel time 10-15" approx.), where we will have lunch and stay for the rest of the afternoon.

Afternoon sessions will be at Miguel Hernández University

2.00 p.m. – 2.55 p.m. **Poster session**
Chaired by Nerea Marteache

Each presenter will have 2" to flash present their poster (13" buffer)

José Becerra and Fátima Pérez	Security and tourism in Málaga (Spain): Implementing a crime prevention strategy
David Buil-Gil	Bridging the gap between crime mapping and small area estimation techniques: A small area estimation approximation to perceived disorder in Manchester
Spencer Chainey and Patricio Estévez	Crime concentration in Latin America: Preliminary evaluation of a hotspots policing intervention in four Argentine cities
Nicholas Chavez and Gisela Bichler	Criminal advisors: The altruistic side of the hacker community

Peng Chen	The role of machine learning tools in property crime offender detection
Ella Cockbain, Kate Bowers, and Oliver Hutt	Building a stronger evidence base on human trafficking through an environmental criminological approach
Henk Elffers and Barbara Menting	Hot or not? How spatial concentration patterns may be generated by purely random processes
Cory Haberman and James Kelsay	The topography of crime: Does slope matter?
Tarah Hodgkinson and Martin Andresen	Changing spatial patterns of burglary and the crime drop
Marianne Junger and Marleen Schlömer	Online and offline fraud against businesses: Opportunities, modus operandi and losses
Johannes Knutsson	Advancing policing by using, producing and diffusing evidence
Samantha Lundrigan, Ruth Weir, Kelly Agudelo,and Andrew Newton	Place and space characteristics of stranger rape in London
Fernando Miró Llinares, José E. Medina Sarmiento, and Fernando Llorens Cobos	RiskMent: Analysing spatial concentration patterns by road segments
Emily Moir and Joe Clare	Applying a criminological framework to elder abuse
Andrew Newton	Urban mobility and crime: Examining consumer data to measure crime rates in urban centres
Gohar Petrossian, Dana Miller, Monique Sosnowski, and Diba Ahmadirouzbahani	Flags for sale: An analysis of factors influencing fisher's flag of convenience choice
Reka Solymosi	Using Bayesian Surprise maps to explore debt across the UK
Anna Stewart, Michael Townsley, Janet Ransley, Dan Birks, and Tim Hart	The Social Analytics Lab

Ben Stickle and Sharon Chamard	Impacts of recycling center locations on stolen metal incidents
Damien Wheekers and Renee Zahnow	Risky facilities: analysis of recreational poaching in the Great Barrier Reef Marine Park in Australia
Chong Xu, Lin Liu, Suhong Zhou, and Chao Jiang	Spatial heterogeneity of micro-spatial factors' effects on street robberies: A case study of DP Peninsular
Hongjie Yu, Lin Liu, Guangwen Song, and Qianqing Xi	Spatial heterogeneity of the impact of rainfall on larceny: A case study of the downtown area of ZG City, China

2.55 p.m. – 4.00 p.m. Coffee and poster interaction

4.00 p.m. – 5.25 p.m. Panel 7: Advanced technologies for crime analysis

Chaired by Daniel Birks

Each presenter will have 15" to present and 5" for questions/discussion (10" buffer)

Lin Liu, Chong Xu, Guangwen Song, and Wim Bernasco	Big data and crime research in ZG City, China
Wouter Steenbeek	Machine learning: What's it all about? A comparison to conjunctive analysis of case configurations as a case in point
Raquel Rosés and Cristina Kadar	Simulating robbery patterns with location based social networks data
Reka Solymosi, Laura Vozmediano, and Inês Guedes, David Buil-Gil, and Nuno Teixeira	Measuring fear of crime using app-based and sensing methodologies

5.25 p.m. – 6.00 p.m. ECCAS's general assembly

6.10 p.m. – 8.30 p.m. *Transfer to hotel and free time*

Buses will be ready to depart the hotel at 6.00pm, for transfer to the hotel (travel time 10-15" approx.), where the conference dinner will be held.

6.10 p.m. – 8.00 p.m. *Elche monumental tour (optional)*

Buses will be ready to depart the hotel at 6.00pm, for transfer to the Municipal Park (travel time 5-10" approx.). Once at the park, visitors can walk towards the Palace of Altamira, a former fortress which now houses the Archaeological and History Museum of Elche. The buses will bring back everyone to the hotel by 8pm.

8.30 p.m. – 10.30 p.m. *Conference dinner by hotel pool*

Thursday, June 7

9.00 a.m. – 10.30 a.m. **Panel 8: Green criminology**
Chaired by Tinus Kruger

Each presenter will have 15" to present and 5" for questions/discussion (10" buffer)

Jessica Kahler, Julie Viollaz, and Meredith Gore	Beyond the urban crime jungle: Refining the situational crime prevention framework for conservation crimes
Mangai Natarajan	Situational aspects of human-animal conflict in Tamil Nadu, India: An ECCA perspective
Nerea Marteache and Stephen Pires	Things that matter: Choice structuring properties of burl poaching
Stephen Pires, Nerea Marteache, and Justin Kurland	Mapping burl poaching incidents of redwood trees

10.30 a.m. – 10.50 a.m. Coffee break

10.50 a.m. – 11.55 a.m. **Panel 9: Victimization patterns**
Chaired by Mangai Natarajan

Each presenter will have 15" to present and 5" for questions/discussion (5" buffer)

Stuart Kirby and Scott Keay	Vulnerable people and the places of victimisation
Frank Morgan and Vera Morgan	The gender-gap in violent victimisation in Australia: is it closing?
Zarina Vakhitova, Clair Alston-Knox, Danielle Reynald, and Michael Townsley	Are victims' lifestyles and routine activities useful in explaining the risk of victimization from different types of cyber abuse and non-victimization?

11.55 a.m. – 12.05 p.m. Comfort break

12.05 p.m. – 1.10 p.m. **Panel 10: Dealing with specific crime problems**

Chaired by Ben Stickle

Each presenter will have 15" to present and 5" for questions/discussion (5" buffer)

Richard Wortley, Paul Mazerolle, Li Eriksson, and Holly Johnson	A situational analysis of homicide in Australia
Paul Ekblom, Andrew Newton, Rachel Armitage, Kris Christmann, Leanne Monchuk, Simon Parkinson, and Michelle Rogerson	Spanning the gap between crime, terrorism and security – developing a toolkit for complex stations
Elenice Oliveira and Mangai Natarajan	An analysis of environmental characteristics of bus crime clusters in Belo Horizonte, Brazil

1.10 p.m. – 1.20 p.m. **Closing**

Abstracts

Panel 1: Crime pattern theory

BTW, a test of crime pattern theory

Stijn Ruiter and Toby Davies

Crime pattern theory stresses the importance of offender activity spaces for understanding where crime occurs. Activity spaces comprise both frequently visited nodes and the routinely traveled paths that connect them. Although previous research showed that offenders indeed often commit crimes in or near their own current and past residential areas, in areas they previously targeted, and in the current and past residential areas of their close family members, little is known about the extent to which the paths between their activity nodes feature in their crime location choices as predicted by crime pattern theory. This burglary location choice study analyzes 647 burglaries committed by 360 burglars in the Greater The Hague area in the period 2006-2009. The study makes progress in two ways. First, it uses the more detailed spatial unit of analysis of the street segment (N=57,676). Second, it uses graph theoretic heuristics to identify the most plausible routes offenders could have used to travel between their activity nodes, and to estimate the wider activity spaces built up along the way. Discrete spatial choice models are used to test several hypotheses derived from crime pattern theory.

Activity nodes, activity spaces, and awareness spaces: Measuring geometry of crime's constructs with smartphone data

Timothy Hart, Daniel Birks, Michael Townsley, Stijn Ruiter, and Wim Bernasco

The current study analyses the spatial behaviour of a sample of 48 young adults living in Brisbane, Australia, using data collected from a smartphone app. Drawing on the Brantinghams' geometry of crime theory, we analyse 3,515 "trips" taken by participants, during a 30-day period, characterising three primary constructs of interest: activity nodes, activity spaces, and awareness spaces. Results of our analyses suggest that young adults' everyday routine activities are associated with relatively few activity nodes; an overwhelming majority of pathways between origin and destination nodes were pathways taken

by other young adults enrolled in the study; and a relatively small proportion of young adults' awareness spaces were areas classified as "most aware" to them. Our findings are supportive of the geometry of crime theory's "guiding rules" commonly used by environmental criminologists to explain crime patterns. Implications of these observations are discussed in this context, along with our recommendations for future research.

Crime-place network connectivity and configurations

Tamara D. Madensen-Herold and William H. Souza

Like offenders, places are connected. Connectivity between offender-used places creates "infrastructures" for on-going criminal activity. Persistent and entrenched crime-place infrastructures actively promote crime by (1) allowing frequent offender interactions and (2) offering well-known and attractive crime opportunities to would-be offenders. Recent theoretical advances and research suggest that interventions aimed solely at individual high-crime locations generate limited or temporary success because we fail to uncover and address larger crime-place networks. This presentation will provide examples of crime-place networks identified through police investigations in various U.S. jurisdictions. We will examine differences among network configurations, as well as the dynamics that create connectivity between these locations, to further develop investigative frameworks and effective place-focused policing initiatives.

More time spent, more likely to offend? The influence of visiting frequency on crime location choice

Barbara Menting, Marre Lammers, Stijn Ruiter, and Wim Bernasco

According to crime pattern theory, offenders are more likely to commit offenses within or around their activity spaces. These include the homes of offenders, but also other activity nodes they routinely visit, such as their school, work or leisure activity locations. During their routines, some locations are more frequently visited than others, which likely affects the level of knowledge and spatial exploration in the surrounding areas. Register data sources used in previous crime location choice studies only provided proxy measures of some activity nodes, often limited to offenders' registered home locations, and they do not contain information on visiting frequency. Using data from the Online Activity Space Inventory Survey (OASIS), this study examines the influence of any self-reported activity node on crime location choice (140 offenses committed by 78 offenders), and whether this is affected by how frequently offenders visited their activity nodes. Neighborhoods in which the activity nodes are located are

indicated, and their visiting frequency is determined. Results from discrete spatial choice models show that the presence of any activity node in a neighborhood substantially increases the probability of the neighborhood being targeted, and the effect is significantly larger for activity node neighborhoods that are visited more frequently. Offenders are also more likely to commit offenses in neighborhoods close to an activity node neighborhood, and findings suggest that this applies (even) more to neighborhoods near more frequently visited activity nodes.

Panel 2: Temporal patterns of crime

When do offenders commit their crimes? A within-person analysis of temporal consistency in offending

Sabine van Sleeuwen, Wouter Steenbeek, and Stijn Ruiter

Offenders, victims and potential guardians are all subject to temporal constraints in their daily time budget due to important routines such as work, schooling and household activities. As a consequence, we expect offenders to show consistency in the timing of their offending by repeatedly committing offenses at similar times of the day and days of the week.

Objectives. The aim of the present study is to examine the degree of temporal consistency in individual offending patterns. We also investigate the influence of recency of offenses on the offender's temporal consistency, and the extent to which consistency patterns differ between same-type and different-type offenses.

Method. The hypotheses are tested using police-recorded crime data on repeat offenders who committed offenses between 1999 and 2009 in the greater The Hague area in the Netherlands. The observed level of within-offender consistency with regard to time of day and day of week is compared with a randomized measure for temporal consistency using Monte Carlo simulation.

Conclusion. The results show a higher degree of consistency for offenses committed at similar days of the week and similar times of the day than for offenses committed at different days and times. We conclude by discussing the implications of the results and avenues for future research.

Modeling the spatial patterns of intra-day crime trends

Andrew Wheeler and Cory Haberman

In this analysis, we model intra-day robbery and assault patterns in Seattle as a function of broader neighborhood patterns and micro-level placed based factors of being nearby on premise alcohol outlets or public schools. We demonstrate that aggregate level within-day crime patterns can be effectively modelled as a wave. Using geographically weighted regression, while some areas show earlier or later peaks for crime, all areas of the city demonstrate a similar wave pattern throughout the day. Micro level multinomial models predicting the hour of the day an incident will occur show spikes in robberies and assaults nearby bars that dissipate around 500 feet, and spikes around schools before and after school is in session. While the within day temporal wave

dominates both robbery and assault patterns, and is spatially consistent in both high crime and low crime places throughout the city, appropriate statistical modeling can identify either shifts in the wave in different neighborhoods, or bumps in the wave around bars and schools at hypothesized times. A current working paper version can be obtained at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3136030.

Understanding spatio-temporal patterns of crime around schools

Matthew Ashby

Several studies have identified schools (particularly high schools) as sources of heightened risk of street crime, both within schools and in surrounding streets. However, previous studies have typically studied a single city and often a single crime type. This study attempts to answer several questions using data from eight US cities. Firstly, how does risk vary between types of crime across different cities. Secondly, how does risk vary between term time and school vacations. Thirdly, how does any risk associated with schools vary between cities of different types. The results are relevant to both the study of spatio-temporal concentrations of crime and to distinguishing between different theoretical drivers of crime in crime pattern and routine activities theories.

Panel 3: Crime reduction and offender decision-making

Evidence appraisal of systematic reviews in crime reduction: How do place-based interventions measure up?

Lisa Tompson, Aiden Sidebottom, Jyoti Belur, Amy Thornton, and Kate Bowers

In this presentation we take stock of the quality of the evidence base for crime reduction. During the research underpinning the What Works Centre for Crime Reduction we identified 70 systematic reviews that span the spectrum of crime reduction and coded them according to the EMMIE framework. The EMMIE framework evaluates the extent to which a review reports high quality information on the Effect of the intervention, the Mechanism/s by which it works, the Moderators that explain contextual variations, Implementation factors and Economic considerations. We discuss the results with reference to trends over time, the distinction between offender- and place-focused reviews and whether the review was published in academic outlets or from the grey literature.

Offender decision-making

Lucía Summers and D. Kim Rossmo

Research on offender decision-making has been strongly influenced by rational choice theory. This perspective typically operationalizes offender choices as binary (committing the crime or not) or unidimensional (the probability of offending), based on the assumption of a situational cost-benefit assessment. But offenders may be more likely to make decisions by considering a complex array of alternatives that are simultaneously evaluated. Rather than arriving at a simple and absolute decision based purely on the perceived costs and benefits of a given criminal act, an offender may perform a relative assessment wherein alternative courses of action are also considered.

In a mixed-method study, we explored how offenders respond to crime control and prevention measures using a framework incorporating multiple displacement options. Semi-structured interviews of 200 adult offenders convicted of burglary, robbery, or theft were conducted in 14 Texas counties. The interviews involved offender experiences, a control measures effectiveness survey, and crime vignettes.

Results showed that crime prevention and control measures had an effect on offenders' decisions to offend about half of the time. However, such cases only rarely resulted in desistance, as offenders more often decided in favor of an array of displacement options. Measures that increased risk of apprehension or

identification were the most effective. Increased effort or reduced reward appeared to be more likely to lead to displacement than to desistance as offenders tried to compensate. Confronted with repeated blocked opportunities, most criminals eventually desisted, typically after two or three displacement efforts. At that point, effort became a consideration, and subjects talked about being worn down by all the "hassle" of attempting to avoid being caught.

The impact of crime prevention/control measures on offender decision-making was moderated by individual and contextual factors. Several subjects claimed the most potent individual-level factor was whether they offended while under the influence of alcohol or drugs or to support their illicit drug habit; if so, they were willing to take greater risks and engage in additional effort. These offenders were desperate and difficult to deter, and they would invariably displace. Our results highlight the need to go beyond a dichotomized offend/desist.

Crime control and displacement

D. Kim Rossmo and Lucía Summers

Displacement can be viewed as the outcome of offender decision-making following a blocked or modified crime opportunity. In a mixed-method study, we explored how offenders responded to crime control and prevention measures using a framework incorporating five displacement options. Semi-structured interviews of 200 adult offenders convicted of burglary, robbery, or theft were conducted in 14 Texas counties. The interviews involved three offender experiences, a control measures effectiveness survey, and crime vignettes.

All three components of our analysis showed a high likelihood of offender displacement in response to crime control and prevention efforts. Spatial displacement was the most common form of displacement, followed by tactical and target displacement. Many offenders had learned tactics to circumvent specific crime prevention/control measures, which made tactical displacement an easy option. Temporal displacement was typically for only a few hours. Functional displacement was often relatively benign in that it involved a shift to a less serious crime, such as shoplifting.

Prior research has found little evidence of spatial displacement. However, these studies typically examined only the area immediately surrounding the treated location. A focus on changes in aggregate patterns between contiguous areas

appears to have underestimated the extent of spatial displacement, particularly for crimes unrelated to illicit drug or prostitution markets.

Consistent with past findings, our results suggest total displacement is rare. The probability of displacement is a function of offender motivation (and drug use), planning/opportunism, and criminal experience. Experienced criminals tend to be motivated and flexible, and the extra effort required to search for a new target, return at a later time, or travel to a different area was considered to be part of the job. Displacement was generally regarded as involving greater effort but not more risk. These results suggest displacement may be more prevalent than previously thought.

Does opportunity reduction also reduce criminal persistence? Exploring a unified model of crime event and criminal involvement choices

Daniel Birks, Henk Elffers, Matthew Manning, and Michael Townsley

Environmental criminology has traditionally focused on the immediate mechanisms underlying crime events - proposing (and demonstrating) that these proximal causes are easier to both identify and manipulate than a broad range of distal potential causes underlying criminal involvement. In this talk we present exploratory attempts to construct a unified account of crime event and criminal involvement choice. Drawing on both situational and developmental accounts of crime, we forward a parsimonious model of criminal involvement, expressed in terms of (1) an expected utility calculus; (2) state dependent feedback mechanisms; and (3) moderate population heterogeneity.

Using agent-based computational models we demonstrate that this account is sufficient to explain patterns of onset, persistence and desistance widely observed in traditional studies of criminal careers. Doing so, we show that diverse trajectories of criminal involvement can emerge from populations with minimal initial individual differences - finding instead that such diversity can result from adaptations to experience of criminal opportunities. We conclude by discussing potential implications of our findings, recent empirical signatures which may provide support for our account, and by proposing future collaborative efforts which will enable necessary empirical tests of our theory.

Panel 4: Cybercrime and cybersecurity

Hate is in the air! But where? Introducing an algorithm to detect hate speech in digital microenvironments

Fernando Miró Llinares and Asier Moneva Pardo

Using a sample of digital messages (i.e., Tweets) sent via Twitter following the June 2017 London Bridge terror attack (N = 200,882), the current study introduces and evaluates a new algorithm designed to detect hate speech. Through the application of a data mining decision tree classifier technique, our analysis indicates that metadata associated with the interaction and structure of Tweets are especially relevant to successfully identifying the type of content they contain. However, metadata of Twitter accounts are less useful in the classification process. Collectively, findings from the current study allow us to demonstrate how digital microenvironmental patterns associated with metadata can be used to create a computer algorithm capable of detecting hate speech content. Application of the algorithm and the direction of future research in this area are discussed.

Crime and the internet of things: Encouraging security by design through consumer labeling

Shane Johnson and John Blythe

Electronic devices are increasingly connected to the internet. This provides new opportunties to improve the functionality and efficiency of such devices and the services they provide. However, such consumer Internet of Things (IoT) devices often lack adequate in-built security, giving rise to new opportunities for crime. Security should be designed into IoT products at the point of manufacture but at present there is little incentive for manufacturers to do so consistently. Additionally, consumers are not provided with simple information at the point of purchase, in user manuals or other materials to help them assess the security of devices. Consumers are therefore not afforded the opportunity to understand the level of security devices offer. This contemporary problem is reminiscent of vehicle security in the 1980s, and mobile phone theft in the noughties.

In this talk, we discuss our review of crimes facilitated by consumer IoT devices and discuss our work to date on the development of a consumer security index for IoT devices. The index is being developed with government, consumers and security experts to simultaneously: a) raise awareness of the potential threats associated with consumer IoT devices; b) inform consumer decision making at

the point of purchase; and, c) incentivise manufacturers (who have the competency to act) to produce IoT devices with security baked in and activated by default.

Teaching empirical social science research to cyber security students. The case of "Thinking like a thief"

Pieter Hartel, Susanne Barth, Marianne Junger, and Lorena Montoya

We report on an educational experiment where computer science students perform empirical research into the human factor in cyber security. Most courses restrict students to work in a lab environment, but we encouraged our students to conduct a realistic experiment with real-world subjects. The students wrote a research proposal that had to be approved by the IRB. They then executed the proposal, collecting and analysing the data. Finally the students wrote and presented a paper a student conference. The main method of assessment is by peer-review. After teaching the course for six years, we report on the exciting ideas our students came up with, and on the lessons we learned in teaching the course. The main conclusions are (a) offering complete freedom to choose research topics inspires students to design creative projects, (b) working with real subjects creates a stimulating learning experience, and (c) peer-review is a useful assessment tool.

Did cybercrime cause the crime drop?

Graham Farrell

Several recent studies have suggested that cybercrime caused the crime drop because offenders switched from offline to online crime. This study examines the arguments and evidence, particularly those relating to timing and spread and the likelihood of crime-switching by offenders.

Panel 5: Methodological issues in crime mapping

Quantifying the geographic (un)reliability of police data

Manne Gerell

Place-based policing has attracted a substantial amount of attention, not least in relation to hot spot policing. Such policing efforts depend on geographical analysis of where crime takes place. However, while it is well known that police crime data suffer from many limitations, less is known about the extent to which the geographical reliability of these data constitutes a problem. The present study attempts to quantify the extent of this problem by exploiting the fact that in Sweden there is an alternative, and more reliable, source of geographical data for incidents of arson. The study compares the locations for car arson incidents as recorded by the police and the rescue services respectively. The resulting quantification of differences shows that the median error for the police data is 83 meters. This presents a potential pitfall for geographical analysis, both for researchers using police data and for the police themselves in their operational and strategic analysis of crime.

A model for optimizing Chinese crime addresses' geocoding results from multiple map APIs based on clustering and classifying

Weiwei Liao, Shuli Zhou, and Lin Liu

Though police geographic information system was popularized in recent years, millions of historical crime data are stored without precise location (longitude and latitude). For the large volume and irregular structure of addresses of crime, as well as the chaos in the address system in China, it is difficult to geocode crime data and then apply the dataset into micro crime geographic analyses. Thus, we use the online geocoding services to solve this problem, which are capable of transforming text-based addresses into spatial positional data on the map conveniently and efficiently. However, inaccuracies exist in all online geocoding services, and the quantity differs among the services providers. Therefore, it is necessary to filter and optimize geocoded results for improving the accuracy. In this paper, we developed a multi-source integration model for optimizing online geocoding results of Chinese addresses based on a clustering algorithm. The model assesses inconsistencies among various online geocoding providers and come up with an optimal result. It is capable of fast geocoding of massive collections of Chinese addresses efficiently using the application programming interfaces (APIs) of the online geocoding services, including

Amap, Baidu and Tencent. First, data-cleaning rules are applied to examine whether the online geocoding results are credible or not. Then, the credible geocoding results are further improved through a random forest based clustering optimization algorithm. A training address sample with known precise location, consisting of 2000 addresses of theft in ZG City, is clustered based on hierarchical clustering method. The addresses are divided into 8 groups through clustering and then used to train the random forest model, resulting an accuracy of 95.36%. The trained model is then validated using a second sample, also containing 2000 addresses of theft in ZG as well. Our experiments have found the following: 1) for addresses with mediocre level of standardization, Amap geocoding service has the highest quality, but still has the significant spatial inaccuracy; 2) the spatial confidence values and geographic level fed back from geocoding APIs are capable of reflecting the quality of geocoding; 3) locational accuracy of the model is significantly higher than those of the three providers. Overall, for the training sample, the mean of Amap's error distance is up to 590.43m. The model improves the accuracy to 173.73m, with 87.78% of the addresses geocoded. For the validation sample, the model improves the mean of error distance from 554.88m to 180.04m, with 90.08% of the abnormal geocoding results from Amap rejected. The accuracy and geocoding success rates of the two samples are rather similar; and 4) the model is able to optimize geocoding results of addresses in both urban and suburb areas with comparable accuracies, which suggests that the model can be widely applicable. In sum, the model is capable of converting massive text-based Chinese addresses of crime into spatial locations effectively and efficiently, and improving online geocoding accuracy through clustering and optimization.

Minimum geocoding success rates: The impact of data and areal unit sizes

Martin Andresen, Nick Malleson, Michael Townsley, Wouter Steenbeek, and Christophe Vandeviver

The analysis of geographically referenced data, specifically point data, is predicated on the geocoding of those data. Geocoding refers to the process in which geographically referenced data (addresses, for example) are placed on a map. This process may lead to issues with positional accuracy or the inability to geocode an address. In this paper, we investigate the impact of the inability to geocode an address on the resulting spatial pattern. We use a variety of point data sets (varying numbers of points), a variety of areal units of analysis (varying the number of areal units), and a locally-based spatial point pattern test to find the levels of geocoding success rates to maintain the spatial patterns of the original data when addresses are missing at random. We find that the level of geocoding success depends on the number of points and the number of areal

units under analysis, but generally show that the necessary levels of geocoding success are lower than found in previous research.

Identifying the appropriate spatial resolution for the analysis of crime patterns

Nick Malleson, Martin Andresen, Martin, and Wouter Steenbeeck

A substantial body of recent research has found that crime concentrates at 'micro places' and, in general, the smallest unit of analysis is the most appropriate for many quantitative environmental criminology studies (Weisburd et al., 2009; Weisburd, 2015; Eck et al., 2017; Lee et al., 2017). These findings, that have emerged through a number of disparate research efforts, were synthesised in a recent systematic review (Lee et al., 2017) that found consistent support for this "Law of Crime Concentration at Place" (Weisburd, 2015). These findings align both with established environmental theories - that highlight the local nature of criminal events (Cohen and Felson, 1979; Brantingham and Brantingham, 1981; Clarke and Cornish, 1985) - and with the observations of other spatial urban phenomena such as pedestrian movements and traffic congestion, where aggregate analyses have been found to hide important lower-level patterns (Batty, 2005, 2012).

However, determining the appropriate 'place' is non-trivial. 'Place' can be defined in a number of ways - such as by address, on street segments, or within small grid cells (Lee et al., 2017) - and although smaller units of analysis are typically better able to identify crime concentration (Weisburd et al., 2009), does this hold for all crime types and all areas? Furthermore, given the high-resolution data that are required for studies at the level of micro-places, such as individual addresses, are harder to obtain than more aggregate data, one could ask the question: "at what point does it become unnecessary to obtain finer scale data?". In other words, are address-level data required for studies of all crime types in all regions, or might more aggregate data be sufficient? It is likely that there will be a 'minimum' spatial resolution that is the most appropriate for the analysis of a particular phenomena. For some phenomena, the neighbourhood might be an appropriate unit of analysis, whereas for others it might be necessary to aggregate points to a much higher resolution geography.

The aim for this work is to develop a general method that is capable of identifying the most appropriate resolution for the analysis of spatial patterns. The new method adapts the multiple resolution goodness-of-fit procedure originally conceived by Costanza (1989) and combines it with a measure of spatial (dis)similarity - Andresen's S (Andresen and Malleson, 2011) in order to identify the most appropriate scale of analysis for a particular point pattern (crime events in this case). It works by placing regular grids of varying resolution over two point

crime patterns and estimating the similarity of the patterns at the different resolutions. In this manner, the similarity can be compared across the different resolutions to give an idea about how the similarity of the patterns change with spatial scale. We also demonstrate how to assess the change in similarity to choose the resolution that is the most suitable for analysis of the given crime series.

Panel 6: Policing initiatives

An expanded SARA model for mid-level police leadership

Jerry Ratcliffe

This presentation introduces an expanded SARA model based on meetings and discussions with mid-level police officers in various countries undertaken during a recent sabbatical. It is structured around a number of checklists designed to be a guide for mid-level command staff faced with assessing and addressing street-level crime and harm problems in a geographic command area. It will feature in a forthcoming book ("Reducing Crime") with supporting website and additional materials.

Results from a blind random controlled trial testing police response in micro-time hot spots

Roberto Santos and Rachel Santos

This presentation will illustrate the results of a 2-year blind random controlled trial that tested the effectiveness of police response in residential burglary and theft from vehicle micro-time hot spots. A micro-time hot spot, also called a "crime pattern" in crime analysis practice, is the emergence of several closely-related crimes within a few minutes travel distance from one another (i.e., micro-place) that occurs within one to two weeks (i.e., micro-time)—a crime "flare up." Once a micro-time hot spot appears, it can last for several weeks or months before running its course, cooling down, and ending on its own. The concept of the flare up is routed in the near repeat phenomenon as it is a spatial cluster of near repeats occurring over a relatively short period of time. In this study, the partially blocked random controlled trial, was carried out by the police agency "pro bono," and only the chief, assistant chiefs, and crime analysts were aware that the experiment was taking place. The study tested the effectiveness of directed patrol, which included patrolling areas in vehicles making subject and vehicle stops as well as contacting citizens with crime prevention information. The goal of the response was to prevent crime from continuing in the micro-time hot spot and causing it to "cool down" sooner than it would without response. The research occurred within the context of the agency's everyday crime reduction efforts, so is a test of realistic police practice. That is, the police department had identified and responded to micro-time hot spots systematically for many years. For this study, as crime analysts identified micro-time hot spots on a daily basis, the micro-time hot spots were randomly selected "on the fly." Those selected as controls were held back and not disseminated so

that the police department had no knowledge they had occurred. Only those micro-time hot spots randomly selected for treatment were disseminated to police personnel for response. A previously established system of response and accountability in the agency ensured consistent and thorough responses throughout the 2-year treatment period. Accordingly, findings from a detailed analysis of the nature of the response and dosage as well as the impact on crime will be presented through descriptive statistics and a negative binomial regression model.

Post-hoc evaluation of a police-led pilot cocooning intervention: A promising start with room for improvement

Joe Clare and Nicola Stokes

The Western Australian Police piloted an 8-month small-scale targeted burglary prevention initiative involving distribution of crime prevention pamphlets to burglary victims and their immediate neighbors in the few days directly after victimization. As external researchers, we undertook a post-hoc evaluation of this intervention, examining (a) a pre-and post-comparison of the spatial/temporal burglary patterns using Ratcliffe's (2009) near-repeat calculator, (b) police records relating to the implementation of the intervention, and (c) an online survey of residents who had been scheduled to receive the burglary prevention information. In aggregate, this triangulated data suggested this approach is promising, with reductions in near-repeat residential burglary and survey trends that were indicative of the pamphlet changing residents' behaviors to reduce the opportunity for burglary. However, data management implementation limitations that reduced the impact of this police-led approach were also identified. The theoretical and applied implications will be discussed, along with a preview of 'where-to-next' for this approach on a local level.

Near repeat burglary: Estimating crime prevention potential

Elizabeth Groff and Travis Taniguchi

There is a large and growing body of evidence indicating that once a burglary has occurred, nearby homes are at higher risk for being targeted, but that risk decays quickly over time. Burglaries that occur within this risky space-time window are termed near repeats. The space-time risk window associated with near repeat patterns would seem to present a natural opportunity for crime prevention efforts. However, constraints associated with the reporting of, police response to, and space-time patterning of burglaries can reduce the crime prevention potential of such efforts. To better estimate the crime prevention potential of focusing on near repeat burglaries we examine burglary patterns in

10 United States cities. The results of this test provide important guidance for implementing and evaluating crime prevention efforts focused on near repeat events.

Predictive policing: Where's the evidence?

Rachel Santos and Roberto Santos

Predictive policing has been defined as the application of analytical techniques—particularly advanced quantitative techniques—to identify geographical areas or offenders for police intervention based on statistical predictions. This term is becoming widely used by medium to large police agencies in North and South America, Europe, Asia, and Australia to refer to a variety of policing strategies. This presentation focuses on one method of predictive policing that is widely represented in the news media and in police practice in which software forecasts individual crimes to direct patrol officers into 500-by-500 foot areas (i.e., boxes) that are at a higher risk of a crime occurring during a particular 8, 10, or 12 hour shift. Unlike hot spots policing, where patrol resources are directed into long-term hot spots for a period of several months to stop the long-term trend (i.e., many crimes) from continuing, the objective of this technique is to inform response for the next shift to stop a single crime from happening. This presentation is a critical discussion of the predominant trend in which predictive policing technological solutions are purchased by police departments that bypass the field of crime analysis and crime analysts. It will include a discussion of the analytical techniques and software, the accuracy of predictions as well as the use of this particular predictive policing method in police practice. The discussion will draw from the current research, news media, as well as the presenters' experience.

Poster session

Security and tourism in Málaga (Spain): Implementing a crime prevention strategy

José Becerra and Fátima Pérez

Malaga, a city by the sea in Southern Spain, is a very safe city with a flourishing tourist industry focused on museums, monuments and outdoor activities (especially beaches). In the last ten years, the number of tourists that visit the city have increased greatly and, consequently, some major changes have occurred.

Major urban reforms have taken place, together with a shift in commercial activities in some areas, residents moving out of the city center, a booming offer of private owned apartments for rent, the arrival of big cruises that unload hundreds of tourists directly into the heart of the city, etc.

All this factors are generating a set of security challenges the city is facing without a proper diagnosis of specific problems and possible actions to tackle them.

Because of that, we are conducting a systematic analysis of the security situation in relation to tourism in Malaga, which includes the use of official data, a set of victimization surveys, police officer´s interviews and direct observation of tourist dynamics.

We'll present our victimization results together with our initial proposals for further research and potential areas of intervention.

Bridging the gap between crime mapping and small area estimation techniques: A small area estimation approximation to perceived disorder in Manchester

David Buil-Gil

Signs of disorder, both observed and perceived, play a vital role to understanding citizens' wellbeing in the city. For residents, teenagers walking around and public drinking, but also deteriorated housing and graffiti, can be perceived as disorderly and threatening. Even factors such as the concentration of minorities and neighbourhood poverty are bound up by social meanings frequently associated to disorder. Research has shown that such perceptions are explained not only by visible signs of lack of order, but also by the social meanings behind the concentration of minority groups and poverty, as well as collective efficacy. Neighbourhood disorder has also been associated to

increased crime. Whether perceived disorder is seen as a causal element of crime or as socially damaging phenomenon itself, it is necessary to have an accurate picture of its geographical distribution at low area level to comprehend its individual and environmental predictors and design spatially focused interventions.

In order to map perceived disorder at neighbourhood level, the most important source of information is sample surveys. These need to record big samples of citizens per small area in order to allow direct estimates of adequate precision. Unfortunately, most available sample surveys are designed to be only representative of large areas. Thus, in order to produce reliable maps without need to record new data, model-based small area estimation approaches, which make use of already existing survey data and introduce models to borrow strength from related areas, are helpful to produce reliable estimates of variables of interest.

This research aims to produce precise spatial Empirical Best Linear Unbiased Predictor (SEBLUP) estimates of perceived disorder for 282 Lower Super-Output Areas in Manchester and to discuss which neighbourhood-level covariates are significant to predict its spatial distribution. SEBLUP considers random area effects between neighbouring areas to reduce the mean squared error of the estimates.

Crime concentration in Latin America: Preliminary evaluation of a hotspots policing intervention in four Argentine cities

Spencer Chainey and Patricio Estévez

The Argentina Hotspots Policing Programme is a large multi-city hotspots policing intervention in 4 Argentine cities (Santa Fe, La Plata, Morón, and Tres de Febrero). It is part of a joint project with the Argentine Ministry of Security, the municipalities of Buenos Aires and Santa Fe, the Interamerican Development Bank and the UCL Latin America and Caribbean Unit that aims to improve the capabilities of Argentina's police to analyse and prevent urban crime. In this project, we present new methods of analysing crime concentration at place, with particular attention to their usefulness in an operational setting. Then, we assess the impact of the (ongoing) intervention after it has been in operation for 3 months, to evaluate its progress thus far. As no randomised control units were selected before the intervention, we explore difference-in-difference regression models, as well as simulation methods.

Criminal advisors: The altruistic side of the hacker community

Nicholas Chavez and Gisela Bichler

Inundated with reports of major data breaches exposing private information of millions of people, it is hard to ignore issues of security in a digital age. Positing that hackers are the most knowledgeable about the risks and vulnerabilities inherent to online activity, this project examines the protection methods suggested by hackers to guard against online victimization through the lens of Situation Crime Prevention. Data were collected from 85 webpages representing three categories of electronic communications: forums, blogs, and fan pages. Three goals drove this project: 1) to identify what opportunity reduction techniques were most often recommended by the hacking community; 2) to investigate whether the set of recommendations fit the SCP framework; and, 3) to examine the level of expertise associated with the suggested security measures. Without giving away too much, please know that the results are provocative, and that you should plan to visit this poster. Our concluding comments explore the utility of using criminals as advisors when developing recommendations on how people could protect themselves online.

The role of machine learning tools in property crime offender detection

Peng Chen

Nowadays, more data is available for crime analysis, which is leading to a knowledge discovery priority instead of merely pattern identification. In such a situation, complex algorithms and models should be proposed in solving more specific problems in crime. In this work we demonstrate the principles of detecting property crime offender using machine learning tools. By collecting resolved bicycle-theft crime data from Beijing we accessed rich data on offenders, which includes their physical, social information and offending behavior stamps, and then we process the dataset by calibrating and quantifying the bool or text variables. Using the cleaned data on offender several tests were carried out to predict or identify the offender identity by utlizing decision-tree and binary logistic regression methods, the results indicate a satisfied prediction accuracy could be achieved and more than that in big data era deep insight of crime data shoul be mined by using complex tools to enhance understandings on crime analysis.

Building a stronger evidence base on human trafficking through an environmental criminological approach

Ella Cockbain, Kate Bowers, and Oliver Hutt

Human trafficking, or 'modern slavery', is widely described as one of the greatest organised crime threats facing society. Despite enormous interest and investment in tackling human trafficking, the evidence base remains notoriously weak and there is a particular dearth of robust quantitative research. In this poster, we will present preliminary findings from an innovative programme of research designed to improve understanding of human trafficking and inform prevention, detection, disruption and victim protection.

With the support of the UK's National Crime Agency, we secured unprecedented access to two key sources: 1) the national database of trafficking referrals, which contains individual-level on suspected trafficking victims, for 2009-2014 (n=6,858); and 2) detailed case files for all officially identified victims of labour trafficking from Europe in the UK in 2012 and 2013 (n=453). Although the sources certainly have their limitations, they enabled a systematic exploration of information not previously prioritised for monitoring or analysis (including information scattered across voluminous paper files).

We start by asking whether there are significant differences between victims of human trafficking for sexual exploitation, domestic servitude and (other) labour exploitation. Using logistic regression analysis, we show that a small number of variables relating to individuals and their trafficking experiences are significant predictors of trafficking type. The overall models account for a large proportion of the variance. The implications are clear: a nuanced approach to tackling different types of human trafficking is needed, rather than relying on a one-size-fits-all model historically developed around sex trafficking.

Next, we turn our attention specifically to labour trafficking. We present descriptive analysis of the socio-demographics of these trafficking victims and their experiences, including pathways to recruitment, specific industries of exploitation and economic exchanges. Locating trafficking risk at individual-level alone, we argue, misses a vital opportunity to consider how trafficking concentrates geospatially. We present preliminary spatial maps of the geographies of trafficking, created using locational data in the files. Distinguishing between key location types (e.g. those places where victims were recruited, crossed borders, were housed or were exploited), we show how risk is not evenly distributed across key countries of interest, but rather clusters spatially. We discuss the limitations of the data sources and consider which might be addressed through improved data collection processes.

Hot or not? How spatial concentration patterns may be generated by purely random processes

Henk Elffers and Barbara Menting

Often police briefings start with displaying an uneven distribution of crime victimization. Officers are then deployed with an eye on such data. This is not necessary a wise policy, as some concentrations may occur even under purely random crime location choice.

In this paper we will (1) present a simulated example where aggregated purely random location choices generate a distinct concentration of victimization (2) ponder about how common such 'random concentration' may be (3) suggest that we should measure concentration in terms of surplus risk, compared to concentration patterns that can be expected under appropriate randomness conditions (4) discuss what this means for the use of concentration maps.

The topography of crime: Does slope matter?

Cory Haberman and James Kelsay

Leading environmental criminologists have theorized that topography may affect spatial crime patterns. To date, elevation and/or slope are the only variables from physical geography that have been considered in environmental criminology research, but the research linking elevation/slope and spatial crime patterns has been mixed. Therefore, the present study builds on earlier work and recent methodological advancements in crime and place research to examine the link between street block slope and street block predatory robbery patterns after controlling for the presence of potentially criminogenic facilities, features of the underlying street network, and socio-demographics in Cincinnati, OH. The results' implications for environmental criminology theory are discussed, but our findings may not be generalizable to all other cities given the relative uniqueness of Cincinnati's formation.

Changing spatial patterns of burglary and the crime drop

Tarah Hodgkinson and Martin Andresen

In this paper we investigate the changing spatial patterns of the residential burglary crime drop in Vancouver, British Columbia. We use kernel density estimation, local spatial statistics, and a spatial point pattern test to identify any changes in the spatial patterns of burglary over time and investigate causal relationships. We find that, generally speaking, there has been a spatial shift in residential burglary, 2003 – 2016, with that shift moving into areas with relatively less physical security. This result is consistent with the security hypothesis to explain the crime drop with much of the decreases in residential burglary occurring in areas with increases in multi-family dwellings that have higher levels of security than single-detached homes.

Online and offline fraud against businesses: Opportunities, modus operandi and losses

Marianne Junger and Marleen Schlömer

In the present study we analyze 300 cases of (attempted) fraud against businesses: CEO-fraud, Ghost Billing schemes, Fraudulent contracts. These types of fraud have different modus operandi. For instance, CEO-fraud is done mainly through email, ghost billing schemes by mail, and fraudulent contracts offenders mainly use the telephone. We studied the type of business at risk for which types of fraud. We also investigated the impact of scalability of the modus operandi, seasonality, location of fraudster, the economic sector, company size and company location. Fraud type was unrelated to fraud 'success' (whether the victim paid or not). For CEO Fraud, 9% of the businesses paid, for Fraudulent Contracts it was 8% and for Ghost Billing Schemes is was 7%. However, the amounts asked for and received were much higher for CEO fraud (all amounts € 10,000 or more), followed by fraudulent contracts (80% less than € 10,000), while for Ghost Billing schemes the amount asked was € 500 or less in two third of the cases. This suggests that the more effort fraudsters put in a fraud attempt, the higher the amounts of money they asked for and received from victims when they were paid. Fraudsters operate mostly from the Netherlands, except for CEO fraud that is operated mostly from other European countries. There are clear seasonality effects: CEO Fraud is done mostly in the summer, Ghost Invoices mostly in spring. We found few differences in fraud by location of victims. The industrial sector seemed to be most at risk for fraud.

Advancing policing by using, producing and diffusing evidence

Johannes Knutsson

The poster is about how an innovative idea of a particular police scheme for managing protest events was developed and instituted by the Swedish police. The scheme – dialogue policing – is ultimately about how police can support freedom of speech and assembly thereby reducing confrontations between protesters and police. During the process experiential knowledge and research based evidence played crucial roles. Evidence was used, produced and diffused in an iterative process over a prolonged time period where not only Swedish scholars took part. The progression was not smooth, simple, and linear. On the contrary, several threats and obstructions emerged.

Place and space characteristics of stranger rape in London

Samantha Lundrigan, Ruth Weir, Kelly Agudelo ,and Andrew Newton

The aim of this research was to examine the spatial distribution and environmental characteristics of stranger rape in a large UK metropolitan area. The research utilised geocoded stranger rape data recorded in the London Metropolitan Police Service area between 2001 and 2016. This equated to 10,488 recorded offences, 3,199 which were categorised as stranger 1 rapes, where there was no prior relationship between the victim and the perpetrator and 7289 as stranger 2 rapes, where the perpetrator was still a stranger, but there had been some interaction between the two prior to the offence (e.g., spoke in a bar or provided a taxi service). All spatial analysis was conducted in the Geographical Information System (GIS), ArcGIS with statistical analysis carried out using the Spatial Analyst extension. Our poster will present the preliminary findings from this research and outlines emerging implications for the prevention and deterrence of rape in the urban landscape.

RiskMent: Analysing spatial concentration patterns by road segments

Fernando Miró Llinares, José E. Medina Sarmiento and Fernando Llorens Cobos

Formal and informal surveillance and supervision play an important role in preventing crime in general. In this sense, as revealed Routine Activity Theory, the "capable guardian" element is not formed exclusively by the police, or even primarily. However, in the case of offenses of driving under the influence of alcohol or drugs, research has shown that formal surveillance is essential in detecting and reducing these behaviors. Therefore, the design of efficient allocation methods effective enforcement has become a priority for the authorities responsible for managing them. In this study, a review of the application of different methods of spatial analysis of crimes of driving under the influence of alcohol or drugs, in order to establish which of them would allow better distribution of enforcement resources is presented.

Applying a criminological framework to elder abuse

Emily Moir and Joe Clare

In the elder abuse sector, there is a strong focus on responding to the problem, rather than preventing the problem. The purpose of this paper is to understand how adopting a criminological approach may help to understand how opportunities for elder abuse arise, and how targeted prevention strategies can be created and implemented for specific types of elder abuse. In particular, how POP and the SARA model can be used to understand how elder abuse occurs, what responses are available to prevent specific types of elder abuse, and how we can evaluate such approaches. Overall, we argue that elder abuse prevention

can benefit from applying a criminological approach to understanding what causes specific types of elder abuse and how these can be prevented.

Urban mobility and crime: Examining consumer data to measure crime rates in urban centres

Andrew Newton

Crime in urban centres is well understood not to be random and concentrated in particular locations (hot spots) at certain times. Much research has sought to explain these spatio-temporal crime patterns in terms of neighbourhood, physical, and socio-demographic characteristics. However, crime rates are generally identified based on census population and household counts, which are often not representative of urban mobility patterns during the day, and do not account for the dynamic mobility of people in urban spaces. The growth of consumer data enables a much better understanding of how different crime types (burglary, criminal damage, theft, vehicle crime) may be related to urban mobility. This study will assess the utility of CDRC transport, retail and footfall data, and mobile data (twitter and crowd sourcing data) to better assess crime risk (rates) and for the police to better target resources in local crime hot spots in time and place, given the underlying urban mobility patterns present.

Flags for sale: An analysis of factors influencing fisher's flag of convenience choice

Gohar Petrossian, Dana Miller, Monique Sosnowski, and Diba Ahmadirouzbahani

Illegal, unreported and unregulated (IUU) fishing costs the global economy tens of billions of USD dollars annually, although accurate estimates of the current extent of this activity remain uncertain. Those that participate, break or avoid fisheries management rules often employ such tactics, as registering their vessels under foreign flags, commonly known as "flags of convenience" (FoCs). The practice of using FoCs by fishing vessels impedes prevention efforts to effectively deter or eliminate IUU fishing. While literature has proposed a large number of factors explaining fishing vessel owners' choices to fly flags of certain countries, an empirical assessment of these proposed factors has not yet been made. This research, therefore, fills this gap by empirically evaluating 32 such factors. Results show that desirable flags are flags of countries that are largely non-compliant with fisheries-related regulations, regardless of their ratification of major international agreements. The same flags are easy to acquire and allow fishing vessels access to a large number of countries' territorial waters and areas

managed by regional fisheries management organizations. Policy implications are discussed in light of these findings.

Using Bayesian Surprise maps to explore debt across the UK

Reka Solymosi

Spatial inequalities have an effect on outcomes for individuals and regions. In the United Kingdom in particular, regional disparities in economic performance are now greater than those found in any other European country. Yet empirical investigation into the spatial patterns of indicators of business failures, such as debts has not been carried out widely in the UK. In this paper, we consider the application of the technique of Bayesian Surprise Maps to visualise County Court Judgments (CCJ), to present these data in a way to aid interpretation of patterns and emerging trends. Bayesian Surprise Mapping addresses many biases associated with traditional thematic maps by weighting event data relative to a set of spatio-temporal models. By applying this methodology to the mapping of CCJ data, we identify unexpected events (those that induce large changes in belief over the model space). We then consider differences in local circumstances, to suggest possible mechanisms behind companies' struggles. Measures of "companies in trouble" can indicate regions where companies might experience economic strain, which has been linked with instances of corporate crime. Therefore findings have implications for creditors, company law practitioners and law enforcement in corporate crime areas.

The Social Analytics Lab

Anna Stewart, Michael Townsley, Janet Ransley, Dan Birks and Tim Hart

The Social Analytics Lab (SAL) is a secure facility that provides infrastructure to store, manage and analyse sensitive data for research purposes. It enables approved researchers from national or international academic institutions to access sensitive datasets provided by a variety of data custodians. It is designed to handle information of varying levels of sensitivity and confidentiality of benefit the research community.

Impacts of recycling center locations on stolen metal incidents

Ben Stickle and Sharon Chamard

Metal Theft is a growing crime problem significantly affecting the built environment. This crime type is unique in that the thief finds no direct value in what is stolen, instead relies on exchanging the metal for cash, often through an established market. This criminal exchange occurs at a limited number of

markets such as scrap yards or recycling centers alongside legal metal sales. The present study examines the potential impact of markets for stolen goods (e.g., recycling centers) on incidents of metal theft through spatial analysis of the locations of those thefts and of recycling centers that purchase scrap metal.

Risky facilities: analysis of recreational poaching in the Great Barrier Reef Marine Park in Australia

Damien Wheekers and Renee Zahnow

This paper extends criminological interpretations of risky facilities to focus on how illegal fishing is concentrated in a small number of places in the Great Barrier Reef Marine Park (GBRMP) in Australia. Testing the applicability of the general hypothesis of risky facilities - that crime is highly focused among certain people, places and things - the results demonstrate that the spatial distribution of poaching in the GBRMP reflects previous environmental criminology studies showing that crime is concentrated in a small number of places. Poaching risk increases in no-take zones which share a number of homogenous characteristics that also attract legitimate routine activity. Our findings lend support to the emerging environmental criminology literature which examines wildlife crime through the lens of opportunity. Such an approach provides conservation practitioners with an established framework for developing prevention based compliance management strategies in marine protected areas.

Spatial heterogeneity of micro-spatial factors' effects on street robberies: A case study of DP Peninsular

Chong Xu, Lin Liu, Suhong Zhou, and Chao Jiang

Urban crime has increasingly become a major issue in the context of rapid urbanization in China. Investigating the patterns and effects of spatial factors on urban crime is of great importance for urban public safety and security. The relationship between robbery and spatial factors has long been a popular topic in crime research. Focusing on the DP Peninsular of H City as the study area and using a total number of 373 street robbery incidences obtained from the Public Security Bureau Call for Service Data in the period of 2006-2011, this study examines the spatial heterogeneity in the effects of micro-spatial factors on street robberies by Moran's I、ordinary least squared regression (OLS) model and geographically weighted regression (GWR) model. Firstly, a theoretical framework is developed for analyzing the impacts of micro scale spatial factors on street robbery. Those micro scale spatial variables are identified based on two criminal justice theories – routine activities theory and rational choice theory. Those variables include the amount of bus stops, the number of intersections,

the length of road net, the distance to the nearest police station, the degree of mixed land use, and the distance to the nearest exit of the peninsular. Secondly, based on the kernel density estimation approach, the variation of crime density was estimated for each grid and is modeled as a function of those contextual micro-spatial variables. The number of micro-spatial variables was cut down with the OLS model test. The analytical results show that spatial heterogeneity exists in the effects of micro-spatial factors on street robberies in the DP peninsula by GWR model test. In especial, the amount of bus stops has both positive and negative effects on the crime density, and the effects vary significantly and spatially. The results shed new light on the effects of the spatial factors on crime rate in local scale and suggest the pitfalls of the global averaging model. Overall, the proposed method in this study has the potential to help local police department to identify micro-spatial factors areas with high crime density more explicitly and thus could improve the effectiveness of crime control and prevention efforts centered on street robberies.

Spatial heterogeneity of the impact of rainfall on larceny: A case study of the downtown area of ZG City, China

Hongjie Yu, Lin Liu, Guangwen Song, and Qianqing Xi

The research in the field of criminal geography have been analyzing the macroscale relationship between weather and crime based on Routine Activity Theory, but the small-scale spatial heterogeneity of the impact from weather on crime was neglected. There have been obvious differences among the current research on the correlation between rainfall and larceny, which may be due to the spatial heterogeneity of the effect at small scale, and this spatial variation seems to be related to activities varying spatially. However, the relevant research was still in its infancy.

Purposes To verify the existence of spatial heterogeneity of the impact of rainfall on larceny and explore the possible reasons from the viewpoint of routine activities by a case study of the downtown area of ZG city, China. There are two questions: 1) Does the spatial heterogeneity exist in the influence of rainfall on larceny on the small spatial scale (police district)? 2) Can the difference of routine activities explain this spatial heterogeneity if it does exist?

Methods The study chooses Partial Correlation model for examining the existence of this spatial heterogeneity, using data for weekly rainfall and counts of larceny during the entire year of 2014 from 81 police districts in the downtown area of ZG city, China. Then the study applies a Logistic Regression model for explaining such spatial variation. The dependent variable is coded 1 if there exists a significant correlation between rainfall and larceny, and 0 otherwise.

Independent variables include built environment variables representing routine activities, and social environment variables used as controlled variables.

Results 1) There are nearly 1/5 police districts showing significant negative relationship between rainfall and local larceny when weekly rainfall reaches above 10mm, while other districts show no significance; 2) Higher density of bars, shopping malls and subway stations increase the negative influence of rainfall on larceny; 3) Higher density of banks decrease the negative influence of rainfall on larceny; 4) Higher density of supermarkets, convenient stores, parks and community gardens have no significant effect on the relationship between rainfall and local larceny.

Conclusions 1) The spatial heterogeneity of impact of rainfall on larceny exists on the scale of police districts in the downtown area of ZG city. 2) This spatial heterogeneity is explained by built environment variables pertaining to routine activities.

Panel 8: Advanced technologies for crime analysis

Big data and crime research in ZG City, China

Lin Liu, Chong Xu, Guangwen Song, and Wim Bernasco

This paper introduces research on big data and crime in China. GIS based analysis and spatial statistical methods are used to reveal the spatial and temporal crime patterns from official crime data and related big data, and to explore the associations of crime with environmental and socio-economic factors. Big data such as taxi ridership, mobile phone users and social media data are used to estimate population at risk.

Based on the routine activity perspective, and controlling for the presence and proximity of potential offenders and of guardians, this study focused on the third element of the crime triangle, i.e. the targets or victims. Our contribution aimed to identify the best indicator of populations at risk for 'theft from the person' in a large city in China at different times of the day and different days of the week. We compared the predictive efficacy of four alternative measures (residential population, subway ridership, taxi ridership and phone users).

As for the key issue of this study, with the exception of the early morning (7–10h) when residential population is the best predictor both on weekdays and weekends, taxi ridership and mobile phone users provide the best measures of the risk population, with mobile phone usage being best during the evening period 19–22h. This finding confirms that, due to daily mobility patterns, the size of the residential population fails to continuously reflect the ambient population. This finding is consistent with recent literature that speaks to the same issue (Mburu and Helbich 2016; Hanaoka 2016). However, in the morning, both on weekdays and during the weekend, residential population outperforms the other measures. Arguably, the morning is the period of the day when people are gradually starting to perform outdoor activities, but when the majority of them, including the offenders, have not yet traveled far away from their area of residence, so that residential population fares relatively well as a measure of the population at risk. This finding demonstrates that a time-constant measure like residential population does not necessary always perform worse than time-varying measures like taxi and subway ridership and mobile phone users, and that time is very critical in the assessment of risk populations, an issue that has only recently been appreciated in the literature. In terms of subway ridership, it always ranked last in predicting theft from the person, mainly due to its sparse distribution across urban space and failure in measuring where the people were.

Machine learning: What's it all about? A comparison to conjunctive analysis of case configurations as a case in point

Wouter Steenbeek

Machine Learning (ML) methods (and Predictive Analytics, Artificial Learning, and so on ...) are very popular but not often used in criminology. The potential power of ML is undeniable, with Cambridge Analytica being one example of how with great power did not go hand-in-hand with great responsibility. It has also been argued that Big Data and ML make the scientific method obsolete. Anderson (2008) contends that it "forces us to view data mathematically first and establish a context for it later". Perhaps partly due to the strong stance that the "end of theory" is nigh, ML might be ignored altogether by criminologists who do not agree with the hardcore ML fanboys. I argue that these methods hold promising opportunities regardless of the current debate. In my talk, I provide a gentle introduction to a few key concepts of Machine Learning. In particular, I focus on the type of research questions for which ML is extremely useful, I discuss the bias-variance tradeoff, and shortly introduce a number of ML techniques. As a case in point of ML's potential, I investigate which combinations of different types of businesses and facilities at very small spatial units are most predictive of crime. Previously having been studied using Conjunctive Analysis of Case Configurations, I show the suitability of Machine Learning techniques to study this particular question.

Simulating robbery patterns with location based social networks data

Raquel Rosés and Cristina Kadar

New methodologies from other scientific fields are finding its way into criminology and encourage the study of crime in a new manner. Techniques such as simulation offer the potential to study and understand the complexity of crime within its environment. Indeed, a number of researchers have already applied Agent-based modeling (ABM) to examine the decision-making process of criminals in a virtual environment. Building on these experiences, our research focuses on using novel data sources describing the dynamics of activity nodes within the urban environment to enrich the mobility choices of virtual criminals within a simulation. Based on Routine Activity and Crime Pattern theory we build a virtual world and assess the impact that the use of such data has on modeling crime. Our latest work, combines various virtual mobility strategies with basic decision-making rules adapted from an existing ABM. We explore how various mobility strategies ranging from random movement to movement influenced by popular activity nodes influence the virtual robbery pattern in the urban

environment of New York City. For the most elaborate strategy, we gain information about popularity of activity nodes form location-based social networks data (venues and check-in counts from Foursquare). The spatial crime patterns created by the simulations using various strategies are compared to each other to assess the performance of the each strategy. Ultimately, the generated crime patterns can be compared to historic crime data for New York City, informing the validity of the simulated model.

Measuring fear of crime using app-based and sensing methodologies

Reka Solymosi, Laura Vozmediano, Inês Guedes, David Buil-Gil, and Nuno Teixeira

Recent contributions to the advancement of research into fear of crime focus on framing it as a situational experience. To measure fear of crime operationalised in this way, innovations in technology for data collection must be applied, since survey-based measures of fear of crime are not fit for collecting data that reflect the variation in place and time. Previous work has demonstrated the viability of app-based measures (Solymosi et al 2015). Additionally, measurement would benefit from gathering data about situational elements that affect psychological proximity to crime (Jackson & Gousetti 2015), the number or type of people present (Leitner & Kounadi, 2015), and physiological signals to more accurately and comprehensively measure the fear of crime (Resch et al., 2015).

This ongoing project aims to advance and widen the scope of research into this topic by utilising innovations in technology as research tools. Our objectives are to bring together leading researchers applying new methods to measure of fear of crime to form a collaborative network and develop best practice guidelines, as well as evaluate the feasibility of new sensing-based approaches and the integration of app-based and sensing strategies for a broader comprehension of the topic.

Firstly, we have undertaken a systematic literature review of academic and official materials on the use of app-based and sensing methodologies for the measurement of fear of crime, as well as contact academics and practitioners working on this area. This will serve to synthesise current practice while building a network of researchers for synthesising current app-based measures, eliminate parallel working and bring together those working in this area. In this sense, a first article describing the results of the literature review and three case studies of innovative methodologies applied to the study of fear of crime has been developed; as well as a "Fear of crime research map", an online map where both finished and ongoing international research projects making use of new methodologies in fear of crime research can be visualized.

In a second phase, we will carry out a feasibility study to combine app-based measure with physiological sensors. The aim is to measure people's reaction to various stimuli that are meant to evoke fear of crime using both sensing equipment (eye tracker, GSR, and heart rate) and an app-based self-report measure. This will be done both outdoors, while participants wear sensing equipment and are given a phone with the application- and indoors in a specialised laboratory. The same route and events will be experienced and recreated in the lab. Eye tracker will measure the eye gaze movements, time and the number of fixations while looking at stimuli, while heart rate and GSR will be monitored in order to measure the emotional reactions to the presented stimuli.

Presentation at the ECCA conference is aimed to invite interested researchers to join our network and to promote discussions about the possibilities and implications of the proposed method for fear of crime research and other topics of interest.

Panel 9: Green criminology

Beyond the urban crime jungle: Refining the situational crime prevention framework for conservation crimes

Jessica Kahler, Julie Viollaz, and Meredith Gore

Effective crime prevention techniques that reduce risks associated with conservation crimes (e.g., wildlife poaching and trafficking, illegal logging, fishing and mining) are in demand globally. International and non-profit organizations, private industry, and government agencies all acknowledge a critical need to maintain and improve the effectiveness of traditional enforcement approaches (e.g., patrolling) while developing commensurate community-based approaches that prevent conservation crimes. Applying the Situational Crime Prevention (SCP) framework to conservation helps to answer calls for diversifying responses to these types of crimes as well as 'professionalizing' conservation law enforcement efforts. But the SCP framework was not designed with conservation problems in mind, making its application to conservation crimes sometimes difficult and, therefore, often unappealing to interventionists who sometimes prefer controversial "quick fixes" like militarized conservation. Several recent studies have come up with applied SCP frameworks for conservation crimes based on interviews and focus groups with conservation stakeholders: Viollaz (2016) for illegal leopard killings in South Africa and wildlife trafficking in the Congo Basin, Kahler (2018) for tiger poaching in Indonesia, and Gore et al (2018) for illegal logging in Madagascar. Based on these empirical and participatory studies as well as continued insights from criminology and conservation science, we propose a conservation-informed evolution of the 25 techniques of SCP, which includes an expansion of the framework with a sixth column: "increase incentives for compliance." This column incorporates tactics such as economic incentives for local communities and transparency in management processes. This conservation-informed version of SCP can provide a platform for dialogue between conservation practitioners and the crime science community, increasing the diversity of stakeholder input for solutions and infusing new blood into a conservation battle that has so far seen few success stories and little evidence-based application of criminology principles.

Situational aspects of human-animal conflict in Tamil Nadu, India: An ECCA perspective

Mangai Natarajan

Tamil Nadu, a southern state in India, has a large population of 4000 wild elephants, clustered in several forest "fringe areas" close to villages and towns. Given these large numbers, it is not surprising that conflicts between elephants and villagers are frequently reported in the media. Elephants engage in crop raiding and sometimes kill the villagers defending their crops. On occasion, villagers might kill elephants in retaliation or to prevent further incidents. Villagers use a variety of measures to protect their crops and NGOs have also experimented with different deterrent measures (e.g. electric fences, trenches, barbed wire, scaring tactics, noxious plants, etc). Despite some excellent scientific studies of elephants undertaken in India by conservation biologists, not enough is known about the effectiveness of such measures or their viability. In particular, there has been little scientific study of what the villagers, forestry department and the city administration feel about the conflicts and about the variety of the measures that have been taken to deal with them. Informed by situational crime prevention, the study conducts both focus group interviews with villagers and individual interviews with forestry officers and city administrators in charge of the districts to examine their opinions on the variety of measures that have been taken to do deal with human-elephant conflict. Implications for a program of situational prevention especially using an experimental design will be discussed.

Things that matter: Choice structuring properties of burl poaching

Nerea Marteache and Stephen Pires

Coast redwoods are among the oldest and tallest living tree species on Earth and are considered endangered. Some of the trees grow burls, which are accumulations of unsprouted bud tissue on the tree trunk capable of sprouting new trees (clones) once a redwood falls. If cut, the wound left on the tree leaves it vulnerable to disease. The Redwood State and National Parks, home to the coastal redwoods, has seen an increase of burl poaching incidents in the last few years. Using field observations of all known victimized trees and informal interviews with park rangers, this study aims to give insight into the problem of burl poaching. This research seeks to uncover patterns of behavior of poachers and their decision making processes, with the goal of proposing ways to hinder poachers' opportunities and to increase rangers' capabilities to prevent this type of crime.

Mapping burl poaching incidents of redwood trees

Stephen Pires, Nerea Marteache, and Justin Kurland

Poaching redwood tree burls is a serious problem for Redwood National and State Parks (RNSP) in the U.S.. Poachers remove burls by chainsaw and sell them for profit at local burl shops. As a consequence, targeted trees are left susceptible to disease and can ultimately perish. Given the limited resources RNSP have at their disposal to prevent this issue, an empirically driven resource allocation strategy is needed. This study first explores the spatial distribution of poaching incidents in the RNSP before employing a spatial econometric approach informed by crime pattern theory to understand the features within RNSP that might best explain the poaching problem. The exact logistic regression model suggests that accessible targets, in terms of available redwood trees in close proximity to roads, as well as proximity to burl shops increase the odds of a burl being poached from a given area. Odds-ratios are plotted in a map of RNSP to highlight those areas at greatest risk, and in turn provide practical guidance on more spatially explicit patrols and interventions. Several types of preventative measures such as motion sensor lights, license plate readers, and gated entrances in high-risk locations of the park are suggested.

Panel 10: Victimization patterns

Vulnerable people and the places of victimisation

Stuart Kirby and Scott Keay

It is well documented that repeat victimisation is associated with specific characteristics associated with people and places. In the UK, identifying whether a person is specifically vulnerable is considered central in preventing crimes against them. Indeed, police agencies are now monitored on their ability to do this by the police oversight body (HMICFRS), although no systematic analysis has been undertaken of this data. This study examines recorded crimes in Lancashire (England), during January-December 2017 (N=111,142). All victims identified and flagged by police officers as having a specific vulnerability (10.48%) were analysed in relation to type of crime and place where it occurred. The analysis provides an overview as to the interplay between vulnerable victims with the public and private places where crime occurs. It illustrates a gender split which shows vulnerable females are more likely to be victimised in private premises, whilst vulnerable males are more likely to be victimised in in public areas. The implications of these findings, for the police, is discussed.

The gender-gap in violent victimisation in Australia: is it closing?

Frank Morgan and Vera Morgan

Certain 'facts' surrounding the distribution of crime victimisation seem clear and unchanging. The young are more victimised than the old; men more than women; and urbanites more than 'ruralites'. Yet there are 'alternative facts' for the age/sex distribution in special populations (V. Morgan et al., 2015) and not all countries adhere to U.S. urban/rural distribution patterns (F. Morgan, 2016, V. Morgan et al., 2015).

Furthermore, academic interest in victimisation trends has tended to examine aggregate changes over time, while sometimes ignoring corresponding changes in victimisation distribution (but see Heimer & Lauritsen, 2008)

This paper looks at trends in violent victimisation in Australia, with a particular focus on how the sex-distribution of victimisation has changed correspondingly. It examines the gender-gap in violent victimisation using the latest time series of Australian crime victimisation surveys.

Are victims' lifestyles and routine activities useful in explaining the risk of victimization from different types of cyber abuse and non-victimization?

Zarina Vakhitova, Clair Alston-Knox, Danielle Reynald, and Michael Townsley

Objectives: Recent research suggests that cyber abuse is a complex phenomenon, which could involve direct, indirect and mixed methods of abuse. This study examines whether victims' lifestyles and routine activities can help explain the risk of victimization from different types of cyber abuse and non-victimization.

Method: Online survey with a nationwide crowd-sourced sample (N = 1,463) collected through Mechanical Turk and Bayesian Profile Regression analysis were used to answer the research question.

Results: Bayesian Profile Regression analysis identified five population subgroups based on their lifestyles and routine activities in terms of the associated risk of personal victimization from different types of cyber abuse. We discuss the differences in lifestyles and routine activities between the identified groups.

Conclusions: The findings demonstrate the utility of lifestyle-routine activities in accounting for the risk of personal victimization from different types of cyber abuse and non-victimization.

Panel 11: Dealing with specific crime problems

A situational analysis of homicide in Australia

Richard Wortley, Paul Mazerolle, Li Eriksson, and Holly Johnson

The Australian Homicide Project (AHP) involves self-report data gathered from comprehensive interviews with 302 convicted homicide offenders serving custodial sentences across Australia. Among the areas covered were life events leading up to the offence and the 'who', 'what', 'where', 'when', 'why' and 'how' of the offence itself. The analysis examines differences in the situational dynamics between intimate partner homicide and other homicides. Results are interpreted with in the routine activity approach, rational choice perspective and the concept of situational precipitators. Implications for situational prevention are considered.

Spanning the gap between crime, terrorism and security – developing a toolkit for complex stations

Paul Ekblom, Andrew Newton, Rachel Armitage, Kris Christmann, Leanne Monchuk, Simon Parkinson, and Michelle Rogerson

At ECCA 2016 we co-presented an account of undertaking a 'what works' review for countering terrorism at complex stations, and how we handled the inconvenient fact of the absence of evidence. That project finished with an outline toolkit in diagrammatic form. This time we describe a central aspect of the successor project: developing a working interactive toolkit covering terrorism and other crimes. The focus is on how we help users – senior security staff at complex stations – to make systematic links between an offence type addressed and the security interventions needed to thwart it. In more detail, working from the offender/offence side the focus shifts from the particular Modus Operandi to the specific actions the perpetrators have to undertake in particular zones of the station; and thence to the risk attributes of target and zone environment that precipitate, enable, and engender harm from the actions. Then working from the security side, we start with the objective of reducing a particular offence type, how this is realised by a particular security method; how the method is decomposed into security actions/technologies; and how these in turn address those risk attributes that had made the offence likely and/or harmful. The project will still be in-progress and audience input will be very welcome.

An analysis of environmental characteristics of bus crime clusters in Belo Horizonte, Brazil

Elenice Oliveira and Mangai Natarajan

Official data show an increase in crime in buses between 2011 and 2016 in the city of Belo Horizonte, Brazil. Mapping of the data identified twelve clusters of bus crime throughout the bus system in Belo Horizonte including the newly introduced rapid transit system in 2014 knows as "MOVE". In this paper, we analyze the environmental characteristics of these hotspot locations to identify the crime opportunity structures and to develop appropriate measures to reduce the crimes. We use (1) routine activity theory to understand the absence of capable guardians in time and space; (2) crime pattern theory to examine the nodes and paths where the offender's and victims' activity spaces converge, and (3) rational choice theory to illustrate the offenders' target choices. We used mixed methods in gathering primary and secondary data including (1) focus groups with bus operators, law enforcement personnel, and college students; (2) interviews with passengers; (3) systematic observation of environmental features of the twelve hotspot locations and (4) official reports on bus crimes. Findings are discussed for reducing bus crimes as well as developing safety and security measures for the commuters.